

What is claimed is:

1. A method of connecting a plurality of lands provided on a flexible printed circuit board to a plurality of head terminals provided on an inkjet head, the method comprising:
  - preparing a flexible printed circuit board which has an insulating member, a plurality of lands and a plurality of conductive wires being provided on the insulating member, each land being connected to a corresponding conductive wire, the plurality of lands being arranged on the insulating member at locations in one-to-one correspondence with a plurality of head terminals provided on an inkjet head, the insulating member having a plurality of through-holes each for exposing a portion of a corresponding land;
  - placing a conductive brazing material in the through-hole on each land;
  - facing the lands through the through-holes to the head terminals on the inkjet head; and
  - connecting and fixing the lands to the head terminals by melting the conductive brazing material.
2. The method as claimed in claim 1, wherein the brazing material placing step includes hardening the brazing material after melting the brazing material in the through-hole on each land.
3. The method as claimed in claim 1, wherein the

preparing step includes:

preparing the insulating member from a flexible belt-shaped insulating sheet having first and second surfaces opposite to each other;

5        forming the plurality of lands and the plurality of conductive wires on the first surface of the flexible belt-shaped insulating sheet; and

      forming each through-hole through the flexible belt-shaped insulating sheet at a location for exposing the portion of the corresponding land on the second surface, thereby producing the flexible printed circuit board, and

      wherein the facing step includes the step of locating the flexible printed circuit board relative to the inkjet head in such a state that the second surface of the flexible belt-shaped insulating sheet faces toward the inkjet head and that the portion of each land exposed through the corresponding through-hole in the flexible belt-shaped insulating sheet confronts the corresponding head terminal on the inkjet head.

20        4. The method as claimed in claim 1, wherein the preparing step includes:

      preparing a flexible belt-shaped insulating sheet having first and second surfaces opposite to each other;

      forming the plurality of lands and the plurality of conductive wires on the second surface of the flexible belt-

shaped insulating sheet;

covering the plurality of lands and the plurality of  
conductive wires on the second surface with the insulating  
member in the form of an insulating film, each through-hole  
5 penetrating through the insulating film at a location  
exposing the portion of the corresponding land, thereby  
producing the flexible printed circuit board, and

wherein the facing step includes the step of locating  
the flexible printed circuit board relative to the inkjet  
10 head in such a state that the insulating film on the second  
surface of the flexible belt-shaped insulating sheet faces  
toward the inkjet head and that the portion of each land  
exposed through the corresponding through-hole in the  
insulating film confronts the corresponding head terminal on  
15 the inkjet head.

5. A connecting method of connecting an inkjet  
head to a flexible printed circuit board, the inkjet head  
having a plurality of channels arranged in a staggered  
manner and having a surface on which a plurality of head  
20 terminals is formed in a staggered manner in correspondence  
with the plurality of channels, the flexible printed circuit  
board having a plurality of conductive lands for supplying  
control signals from a circuit board to the head terminals,  
the method comprising:

25 forming, on one surface of a flexible belt-shaped

insulating member, a plurality of conductive lands and a plurality of conducting wires, the plurality of conductive lands being formed in a staggered manner at positions corresponding to a plurality of head terminals on an inkjet head, the plurality of conducting wires being individually  
5 connected to respective ones of the plurality of lands;

forming a plurality of through-holes through the insulating member at positions corresponding to the lands for exposing a portion of each of the plurality of lands on  
10 another surface of the insulating member opposite to the one surface of the insulating member;

placing a conductive brazing material in the through-hole on each of the lands;

facing the lands through the through-hole to the head  
15 terminals; and

connecting and fixing the lands to the head terminals by melting the brazing material.

6. The connecting method as claimed in claim 5, wherein the step of placing brazing material includes  
20 hardening the brazing material after melting the brazing material on each land.

7. A connecting method of connecting an inkjet head to a flexible printed circuit board, the inkjet head having a plurality of channels arranged in a staggered  
25 manner and having a surface on which a plurality of head

terminals is formed in a staggered manner in correspondence with the plurality of channels, the flexible printed circuit board having a plurality of conductive lands for supplying control signals from a circuit board to the head terminals,  
5 the method comprising:

forming, on a surface of a flexible belt-shaped insulating member, a plurality of conductive lands and a plurality of conducting wires, the plurality of conductive lands being formed in a staggered manner at positions  
10 corresponding to a plurality of head terminals on an inkjet head, the plurality of conducting wires being individually connected to respective ones of the plurality of lands;

covering the plurality of lands and the plurality of conductive wires on the surface of the insulating member with an insulating film, the insulating film having a  
15 plurality of through-holes for exposing a portion of each of the plurality of lands;

placing a conductive brazing material in each of the through-holes;

20 facing the lands through the through-hole to the head terminals; and

connecting and fixing the lands to the head terminals by melting the brazing material.

8. The connecting method as claimed in claim 7,  
25 wherein the step of placing brazing material includes

hardening the brazing material after melting the brazing material on each land.

9. A printed circuit board for being connected with an inkjet head having a surface on which a plurality of head terminals are arranged, the printed circuit board comprising:

an insulating member; and

a plurality of lands and a plurality of conductive wires provided on the insulating member, each land being connected to a corresponding conductive wire, the plurality of lands being arranged on the insulating member at locations in one-to-one correspondence with a plurality of head terminals provided on an inkjet head, the insulating member being formed with a plurality of through-holes each for exposing a portion of a corresponding land, the lands facing through the through-holes to the head terminals on the inkjet head, the through-hole on each land receiving a conductive brazing material placed therein, the conductive brazing material being melted to connect and fix each land to the corresponding head terminal.

10. The printed circuit board as claimed in claim 9, wherein the plurality of lands are arranged in a staggered manner on the insulating member, and the conductive wires are formed on the insulating member at locations between the lands.

11. The printed circuit board as claimed in claim 9, wherein each head terminal is provided with a portion retaining a portion of the brazing material thereon to prevent the brazing material from contacting another head terminal next to the subject head terminal.

12. The printed circuit board as claimed in claim 9, wherein the insulating member includes a flexible belt-shaped insulating sheet having first and second surfaces opposite to each other,

10 wherein the plurality of lands and the plurality of conductive wires are provided on the first surface of the flexible belt-shaped insulating sheet, and

15 wherein each through-hole is formed through the flexible belt-shaped insulating sheet at a location for exposing the portion of the corresponding land on the second surface, the second surface of the flexible belt-shaped insulating sheet facing toward the inkjet head in such a state that the portion of each land exposed through the corresponding through-hole in the flexible belt-shaped insulating sheet confronts the corresponding head terminal on the inkjet head.

13. The printed circuit board as claimed in claim 9, further comprising a flexible belt-shaped insulating sheet having first and second surfaces opposite to each other,

25 wherein the plurality of lands and the plurality of

conductive wires are provided on the second surface of the flexible belt-shaped insulating sheet,

wherein the insulating member includes an insulating film covering the plurality of lands and the plurality of  
5 conductive wires on the second surface, each through-hole penetrating through the insulating film at a location exposing the portion of the corresponding land, the insulating film on the second surface of the flexible belt-shaped insulating sheet facing toward the inkjet head in  
10 such a state that the portion of each land exposed through the corresponding through-hole in the insulating film confronts the corresponding head terminal on the inkjet head.

14. A connecting structure of a flexible printed circuit board for connecting an inkjet head to a circuit  
15 board, the inkjet head having a plurality of channels and a surface on which a plurality of head terminals is provided in correspondence with the plurality of channels, the circuit board generating control signals for applying drive voltages to the head terminals, thereby causing the channels  
20 to eject ink, the connecting structure comprising:

a flexible belt-shaped insulating member having one surface and another surface opposite to each other, the one surface confronting a surface of an inkjet head on which a plurality of head terminals is provided;

25 a plurality of lands made of a conductive material and



formed on the another surface of the insulating member at positions corresponding to the plurality of head terminals on the inkjet head, a plurality of through-holes being formed through the insulating member at positions  
5 corresponding to the lands for exposing a portion of each of the plurality of lands on the one surface of the insulating member;

a plurality of conducting wires formed on the another surface of the insulating member and individually connected  
10 to respective ones of the plurality of lands, the conductive wires supplying control signals from a circuit board to the lands; and

a conductive brazing material provided in each of the through-holes and electrically connecting the corresponding  
15 one of the lands to the corresponding head terminal.

15. The connecting structure of a flexible printed circuit board as claimed in claim 14, wherein the plurality of lands are arranged on the another surface of the insulating member in a staggered manner, and the conducting  
20 wires are formed on the another surface of the insulating member at locations between the lands.

16. The connecting structure of a flexible printed circuit board as claimed in claim 14, wherein each of the head terminals is provided with a portion retaining the  
25 brazing material thereon to prevent the brazing material

from contacting another head terminal next to the subject head terminal.

17. A connecting structure of a flexible printed circuit board for connecting an inkjet head to a circuit board, the inkjet head having a plurality of channels and a surface on which a plurality of head terminals is provided in correspondence with the plurality of channels, the circuit board generating control signals for applying drive voltages to the head terminals, thereby causing the channels to eject ink, the connecting structure comprising:

a flexible belt-shaped insulating member having one surface, the one surface confronting a surface of an inkjet head on which a plurality of head terminals is provided;

a plurality of lands made of a conductive material and formed on the one surface of the insulating member at positions corresponding to the plurality of head terminals on the inkjet head;

a plurality of conducting wires formed on the one surface of the insulating member and individually connected to respective ones of the plurality of lands, the conductive wires supplying control signals from a circuit board to the lands;

an insulating film covering the plurality of lands and the plurality of conductive wires on the one surface of the insulating member, the insulating film having a plurality of

through-holes for exposing at least a portion of each of the plurality of lands; and

5 a conductive brazing material provided in each of the through-holes and electrically connecting the corresponding one of the lands to the corresponding head terminal.

18. The connecting structure of a flexible printed circuit board as claimed in claim 17, wherein the plurality of lands is arranged on the one surface of the insulating member in a staggered manner, and the conducting wires are  
10 formed on the one surface of the insulating member at locations between the lands.

19. The connecting structure of a flexible printed circuit board as claimed in claim 17, wherein each of the head terminals is provided with a portion retaining the  
15 brazing material thereon to prevent the brazing material from contacting another head terminal next to the subject head terminal.

20. An inkjet head unit comprising:  
an inkjet head having a surface on which a plurality of  
20 head terminals are formed; and

a flexible printed circuit board connecting the inkjet head to a control circuit board generating a control signal to control the inkjet head, the flexible printed circuit board comprising:

25 a flexible insulating circuit substrate having one

surface and another surface opposite to each other, the one surface confronting the surface of the inkjet head provided with the plurality of head terminals;

5 a plurality of lands made of a conductive material and formed on the another surface of the circuit substrate at positions corresponding to the plurality of head terminals on the inkjet head, a plurality of through-holes being formed through the circuit substrate at positions corresponding to the plurality of the lands, each of the  
10 plurality of through-holes exposing a part of the corresponding one of the plurality of lands on the one surface of the circuit substrate; and

a plurality of conductive wires formed on the another surface of the circuit substrate, each of the  
15 plurality of conductive wires electrically connecting one of the plurality of lands to the circuit board, the conductive wires supplying the control signals from the control circuit board to the lands; wherein

the plurality of the lands is connected and fixed  
20 individually to respective ones of the plurality of head terminals by a conductive brazing material placed in the corresponding one of the plurality of through-holes.

21. The inkjet head unit as claimed in claim 20, wherein each of the head terminals is provided with a  
25 portion retaining the brazing material thereon to prevent

the brazing material from contacting another head terminal next to the subject head terminal.

22. An inkjet head unit comprising:

an inkjet head having a surface on which a plurality of  
5 head terminals are formed; and

a flexible printed circuit board connecting the inkjet head to a control circuit board generating a control signal to control the inkjet head, the flexible printed circuit board comprising:

10 a flexible insulating circuit substrate having a surface confronting a surface of the inkjet head on which a plurality of head terminals is provided;

a plurality of lands made of a conductive material and formed on the one surface of the circuit substrate at  
15 positions corresponding to the plurality of head terminals on the inkjet head;

a plurality of conductive wires formed on the one surface of the circuit substrate, each of the plurality of conductive wires electrically connecting one of the  
20 plurality of lands to the circuit board, the conductive wires supplying the control signals from the control circuit board to the lands; and

an electrically insulating film covering the plurality of lands and the plurality of conductive wires on the one  
25 surface of the circuit substrate, the electrically

insulating film having a plurality of through-holes exposing a part of each of the plurality of lands; wherein

the plurality of the lands are connected and fixed individually to respective ones of the plurality of head terminals on the inkjet head by a conductive brazing material placed in the corresponding one of the plurality of through-holes.

23. The inkjet head unit as claimed in claim 22, wherein each of the head terminals is provided with a portion retaining the brazing material thereon to prevent the brazing material from contacting another head terminal next to the subject head terminal.

24. A printed circuit board for connecting an inkjet head to a control unit, the inkjet head having a surface provided with a plurality of head terminals thereon, the control unit generating signals to control the inkjet head, the printed circuit board comprising:

a flexible insulating substrate having a first surface and a second surface opposite to each other, the first surface confronting a surface of an inkjet head provided with a plurality of head terminals;

a plurality of conductive lands formed on the second surface of the insulating substrate at positions corresponding to the plurality of head terminals on the inkjet head, a plurality of through-holes being formed

through the insulating substrate at positions corresponding to the lands for exposing a portion of each of the plurality of lands on the first surface of the insulating substrate, the plurality of through-holes receiving a brazing material  
5 therein; and

a plurality of conducting paths formed on the second surface of the insulating substrate and individually connected to respective ones of the plurality of lands, the conductive paths transferring controlling signals from the  
10 control unit to the lands.

25. A printed circuit board for connecting an inkjet head to a control unit, the inkjet head having a surface provided with a plurality of head terminals thereon, the control unit generating signals to control the inkjet  
15 head, the printed circuit board comprising:

a flexible insulating substrate having a surface confronting a surface of the inkjet head provided with a plurality of head terminals;

a plurality of conductive lands formed on the surface  
20 of the insulating substrate at positions corresponding to the plurality of head terminals on the inkjet head; and

a plurality of conducting paths formed on the surface of the insulating substrate and individually connected to respective ones of the plurality of lands, the conductive  
25 paths transferring signals from a control unit to the lands;

and

an insulating film covering the plurality of lands and the plurality of conductive wires on the surface of the insulating substrate, the insulating film having a plurality  
5 of through-holes for exposing a part of each of the plurality of lands, the plurality of through-holes receiving a conductive brazing material therein.